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AIRLINE EMPLOYEE SLOWDOWNS AND SICKOUTS AS UNLAWFUL SELF HELP: A LEGAL AND STATISTICAL ANALYSIS

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I. INTRODUCTION

DEREGULATION OF THE airlines caused a radical upheaval in labor-management relations in that industry. While labor relations in the United States have generally been in a state of transition over the past two decades, a combination of decreased government regulation, increased carrier strength through mergers and acquisitions, cutthroat competition, and diminished sentiment among employees and the general public toward unions has had a particularly dramatic impact on labor relations in the airline industry.¹

One example of the changing nature of labor relations in the airline industry is the decreasing use of strikes by unions as the primary method of exerting economic pressure upon a carrier during collective bargaining. Long a

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¹ See generally, CLEARED FOR TAKEOFF: AIRLINE LABOR RELATIONS SINCE DEREGULATION (J. McKelvey ed. 1988) (discussing recent changes and emerging developments in air transport labor relations); McDonald, *Airline Management Prerogative in the Deregulation Era*, 52 J. AIR L. & COM. 869 (1987) (analyzing airline management's right to make organizational decisions without union bargaining or consent); Northrup, *The New Employee Relations Climate in Airlines*, 36 INDUS. & LAB. REL. REV. 167 (1983) (examining the effect of deregulation on employee relations in the airline industry).

potent tool in labor's arsenal, both in the airline industry and industry generally, the economic strike can inflict severe economic damage upon an employer as it grinds the company's business to a halt. The strike has not been a particularly effective tool for airline unions in the 1980s, however. Many airline strikes have brought unions embarrassment at best, and in some cases have caused massive job loss among strikers and even loss of union representation rights.

A number of explanations may be offered for this phenomenon. The government's firing of 11,000 striking air traffic controllers in 1981 set a tone of at least implicit government approval of aggressive management response to union strikes.² A recessionary economy and an often-plentiful pool of striker replacements, along with legal incentives for workers to cross picket lines,³ left many employees reluctant to honor strikes called by their unions. The refusal of unions representing other crafts or classes at a struck carrier to honor the picket lines of their brother unions enabled carriers to continue operating, albeit sometimes at reduced levels, during a strike.

Regardless of the precipitating factors, however, the success record for unions involved in airline strikes during the 1980s is dismal. For example, the International Association of Machinists (IAM) struck Continental Airlines prior to that carrier's bankruptcy in 1983, and the Air Line Pilots Association (ALPA) and the Union of Flight Attendants (UFA) struck the carrier immediately following its bankruptcy filing.⁴ Continental resumed operations after bankruptcy, however, using striker replace-

² Rosen, *Collective Bargaining: A Union Perspective*, in *CLEARED FOR TAKEOFF: AIRLINE LABOR RELATIONS SINCE DEREGULATION*, *supra* note 1, at 11, 15.

³ In *Trans World Airlines v. Independent Fed'n of Flight Attendants*, 109 S. Ct. 1225-26 (1989), the Supreme Court emphasized the right of employees *not* to strike and held that a carrier is not required "to lay off junior crossover employees in order to reinstate more senior strikers at the conclusion of a strike." *Id.* at 1226. This holding permits employees to effectively enhance their seniority by continuing to work during a strike.

⁴ *In re Continental Airlines Corp.*, 64 Bankr. 822, 844 (Bankr. S.D. Tex. 1986).

ments and crossovers at pay rates approximately fifty percent below pre-strike rates.⁵ In April 1985, eighteen months after the strike began, the IAM and UFA surrendered and agreed unconditionally to return to work.⁶ ALPA formally ended its strike six months later pursuant to an order from the bankruptcy court,⁷ but by that time the carrier had withdrawn its recognition of both ALPA and the IAM due to those unions' loss of majority support in the crafts or classes they represented. UFA attempted another strike against Continental in March 1989. The strike ended after only four days because ninety-seven percent of the carrier's flight attendants refused to honor picket lines.⁸

Similarly, the Independent Federation of Flight Attendants (IFFA) struck Trans World Airlines in 1986. The union abandoned the strike after seventy-two days when IFFA leadership told its members to unconditionally return to work, with no assurance that strikers would be rehired.⁹ TWA continued most of its operations during the strike by using striker replacements and crossovers, and nearly 3,800 IFFA members remained unemployed at the end of the strike.¹⁰ Likewise, the Transport Workers Union (TWU) ended a twenty-eight day strike of ground employees against Pan American World Airways in 1985, after accepting a contract offer that differed little from management's last pre-strike offer.¹¹ The TWU negotiators recommended acceptance of the offer for fear that further jobs would be lost by TWU members if the strike

⁵ *Id.*

⁶ *Flight Attendants, Machinists End Strike Against Continental*, 278 AVIATION DAILY 281 (Apr. 19, 1985).

⁷ NATIONAL MEDIATION BOARD, FIFTY-FIRST/FIFTY-SECOND ANNUAL REPORT 63 (1986) [hereinafter NMB ANNUAL REPORT].

⁸ *Broad Powers Ordered for Examiner in Eastern Air Lines Bankruptcy Case*, Daily Lab. Rep. (BNA) No. 57, at A-10 (Mar. 27, 1989).

⁹ NMB ANNUAL REPORT, *supra* note 7, at 61.

¹⁰ *Id.*

¹¹ *TWU Votes to End Four Week Strike, Accepts New Pact At Pan American*, Daily Lab. Rep. (BNA) No. 60, at A-10 (Mar. 28, 1985).

continued.¹² ALPA's twenty-nine day strike against United in 1985 was one of the few airline strikes in the 1980s that was not a complete failure, as ALPA succeeded in its goal of narrowing that carrier's two-tier pay scale.¹³ However, the carrier had prepared to replace the strikers by training a group of 500 new hire pilots then flying for other carriers to induce them to serve as striker replacements on United.¹⁴

Finally, the bitter and dramatic 1989 strike by the IAM, ALPA and TWU against Eastern Airlines proved to be a failure as well. While the unions succeeded in virtually shutting down the carrier for a period of time and driving it into bankruptcy in their principled stand against Frank Lorenzo, most union members lost their jobs as a result. The carrier eventually resumed operations on a smaller scale using striker replacements and crossovers, after divesting itself of the profitable Northeast Shuttle and other choice assets. The ultimate goal of the strike — wresting control of the carrier from Lorenzo's Texas Air Corporation — never was attained, and in the midst of their public rhetoric proclaiming the strike a success, union leaders scrambled privately, searching in vain for a means to save face.

As a result of these experiences, even ALPA's Director of Representation has admitted that a strike is "no longer an effective bargaining tool," and that this fact has "profoundly altered the balance of power in the collective bargaining process."¹⁵ The effectiveness of the strike as a self-help weapon for airline unions today is therefore open to serious question.¹⁶

What, then, has taken the place of the strike in collec-

¹² *Id.*

¹³ NMB ANNUAL REPORT, *supra* note 7, at 60.

¹⁴ Recent Decision, *Air Line Pilots Ass'n v. United Air Lines*, 15 TRANSP. L.J. 435, 438 (1987).

¹⁵ Rosen, *supra* note 2, at 11, 21.

¹⁶ For instance, there were no strikes against major airlines in 1987 or 1988. See *Teamsters Remain On Job at Pan Am, Carrier Imposes Final Contract Offer*, Daily Lab. Rep. (BNA) No. 35, at A-13 (Feb. 23, 1988). While the Teamsters obtained the

tive bargaining? The "corporate campaign" is growing in popularity among airline unions as a self-help tool to replace the strike.¹⁷ This strategy involves orchestrating a sophisticated appeal to a carrier's stockholders, its lenders, travel agents and the traveling public, emphasizing the alleged unfairness of the carrier's bargaining position and sometimes even calling into question the safety of the carrier's operation.¹⁸ Corporate campaigns were carried out on a massive scale against Eastern Air Lines in 1988 and 1989,¹⁹ and previously on a smaller scale against Transamerica Airlines, United Air Lines²⁰ and other carri-

right to strike Pan American upon the expiration of mediation and the cooling off period in February 1988, the union has not commenced a strike. *Id.*

This decline in strikes is not limited to the airline industry. Bureau of Labor Statistics data reveal that the number of strikes in U.S. industry involving 1,000 workers or more has declined dramatically during the 1980s:

| Year | NO. OF STRIKES |
|------|----------------|
| 1980 | 187 |
| 1981 | 145 |
| 1982 | 96 |
| 1983 | 81 |
| 1984 | 62 |
| 1985 | 54 |
| 1986 | 69 |
| 1987 | 46 |
| 1988 | 40 |

U.S. Work Force Shows Record Low Number of Work Stoppages in 1988, Daily Lab. Rep. (BNA) No. 36, at B-1 (Feb. 24, 1989).

¹⁷ See generally, C. PERRY, UNION CORPORATE CAMPAIGNS (1987) (discussing how a "corporate campaign" works, and evaluating the success and failure of these campaigns as a union tactic).

¹⁸ See *id.* at iii. For example, in its national publication, ALPA urged its members, in relation to the strike against Eastern, to "[e]ducate travel agents." DiNunno, *On the Eastern Front*, AIR LINE PILOT, Aug. 1989, at 32, 34. The publication noted that "[s]ome travel agents have been personally contacted by striking Eastern pilots about the carrier's efforts to fly without real workers. Many travel agents are requiring passengers to sign a waiver if they insist on flying Eastern or Continental." *Id.*

¹⁹ See AFL-CIO, *Unions to Increase Pressure on Eastern Air Lines*, Daily Lab. Rep. (BNA) No. 33, at A-7 (Feb. 19, 1988). The AFL-CIO requested the support of the "traveling public and all trade unionists" in a "planned series of rallies, demonstrations, and other activities . . . at hub-city airports." *Id.* The AFL-CIO Council also requested action by Congress, consumers, creditors and shareholders "to 'challenge the shortsightedness of Eastern's business strategy.'" *Id.* Finally, the AFL-CIO Industrial Union Department established a commission to investigate "Eastern's business practices and treatment of its employees." *Id.*

²⁰ See *Air Line Pilots Ass'n v. United Air Lines*, 802 F.2d 886 (7th Cir. 1986),

ers. While such campaigns are generally considered to be lawful,²¹ they require careful planning and substantial resources in order to be successful, and even then the "success" of such a campaign is difficult to measure.²²

Another avenue that unions increasingly pursue is the flexing of their political muscle to bring governmental pressure upon a targeted carrier. Labor's challenge before the Department of Transportation of TWA's fitness to operate,²³ and its assault on Eastern before Congress,²⁴ the Federal Aviation Administration, and a specially-formed "Citizens Commission of Inquiry into Texas Air Corp."²⁵ are recent examples. These efforts require the expenditure of substantial resources, however, and while they may be annoying and even expensive to a

cert. denied, 480 U.S. 946 (1987). Prior to its 1985 strike against United, ALPA informed travel agents around the U.S. of the planned strike, suggesting that they book their clients on other airlines. *Id.* at 893. ALPA also picketed a World Trade Conference hosted by United's chairman, attempting to dissuade conference attendees from flying United. *Id.*

²¹ See, e.g., *id.* at 906-07. While the Seventh Circuit expressed its disapproval of ALPA's tactics "to undermine public confidence in United's ability to continue to provide service" during the period preceding ALPA's strike against United, it did not find ALPA's actions to have violated the Railway Labor Act, largely because United could not show that it was harmed by them. *Id.*

²² For example, one target of labor's "corporate campaign" against Transamerica Airlines was that carrier's corporate parent, Transamerica Corporation. Transamerica Corporation ultimately decided to get out of the airline business, however, shutting down the airline and reinvesting its resources elsewhere. See *Air Line Pilots Ass'n v. Transamerica Airlines*, 123 L.R.R.M. (BNA) 2682 (E.D.N.Y. 1986). As a result, all of the airline's employees became unemployed.

²³ *In re Application of Indep. Fed'n of Flight Attendants to Inst. a Continuing Fitness Investigation into Carl Icahn's Management of Trans World Airlines*, DOT Order No. 89-1-35 (1988)(LEXIS, Trans. library, DOTAV file 44) (alleging mismanagement of TWA and violation of 14 C.F.R. § 204.4 (1989), which requires a carrier "proposing a substantial change in operations" to submit specified information to the DOT).

²⁴ See, e.g., *House Panel Approves Resolution Urging Deeper Federal Investigation of Eastern*, Daily Lab. Rep. (BNA) No. 89, at A-10 (May 9, 1988) (describing congressional resolution calling for Department of Transportation and FAA examination of management practices at Eastern and Texas Air).

²⁵ *Commission Investigating Texas Air Hears Complaints from Subsidiaries' Employees*, Daily Lab. Rep. (BNA) No. 55, at A-12 (Mar. 22, 1988) (reporting on first hearing of Citizen's Commission of Inquiry formed to investigate the impact of Texas Air's acquisitions of Continental and Eastern Airlines).

targeted carrier, their effectiveness as a means of gaining bargaining leverage remains to be seen.

The chief remaining tools of economic pressure increasingly used by airline unions are the work slowdown and the employee "sickout." Implementation of these insidious actions does not require the expenditure of substantial resources, and is generally very effective in bringing pressure to bear on a carrier during bargaining. Such actions often succeed in disrupting a carrier's operations by delaying or cancelling flights, and may result in lost revenue, customer alienation and, if sufficiently lengthy and pervasive, loss of market share. The genesis of such actions is difficult to detect, and they often may be masked in a professed concern for safety.

Work slowdowns and employee sickouts are unlawful. A union's use of these tactics as tools of economic pressure is prohibited by the Railway Labor Act (RLA),²⁶ at least to the extent they are conducted prior to exhaustion of the RLA's mandatory dispute resolution procedures. While injunctive relief is available to a carrier to prevent premature self-help on the part of a union during bargaining, union responsibility for such actions is often hard to prove. Absent a "smoking gun," such as a circulated memorandum or the public comments of a union official calling for a slowdown or sickout, the union is likely to deny responsibility for such an action should a carrier seek injunctive relief. It is not uncommon for union officials to inform the court during hearings for restraining orders or preliminary injunctions, albeit with not-too-subtle winks and nods to their membership, that they abhor violations of the RLA's commands and are doing everything they can to put an end to the job action. Nonetheless, such a job action often will be well-organized and building in strength as they speak. As unions have become more sophisticated over the years, the likelihood that they will leave many "smoking guns" for the carrier

²⁶ 45 U.S.C. §§ 151-188 (1982).

to seize upon as direct evidence to support an injunction has decreased. Thus, the carrier faces a not insignificant problem of proof.

Statistical analysis is a potent defensive weapon of which carriers may avail themselves, however. The same forms of analysis traditionally relied upon by courts to determine whether unlawful discrimination has occurred under the civil rights laws may be applied to airline employee slowdowns and sickouts. The methods of analysis described in this article will determine the likelihood that a particular job action—slowdown or sickout—occurred purely as a matter of chance, or whether it can be inferred that such an action occurred by virtue of some concerted action or conspiracy. Statistical analysis can be used to demonstrate that the odds against a particular increase in aircraft maintenance writeups, flight cancellations or delays, or employee absenteeism occurring purely at random are overwhelmingly high. Such a showing provides a powerful repudiation of union officials' self-serving denials of responsibility for the instigation of such a job action, and should establish at least a *prima facie* case of union orchestration or conspiracy.

This article first discusses the phenomena of work slowdowns and employee sickouts as they occur in the airline industry. It then examines the law developed under the RLA, which holds such actions to be unlawful. Finally, this article explores the use of statistical analysis as a means of overcoming the problem of proof that often stands between a carrier and injunctive relief.

II. WORK SLOWDOWNS AND EMPLOYEE SICKOUTS IN THE AIRLINE INDUSTRY

Industrial guerilla warfare—in the form of work slowdowns and employee sickouts—has staged a comeback in recent times, particularly in the airline industry. Slowdowns or interference by employees on the job are particularly in vogue. One observer recently noted that as airline management becomes more aggressive in its re-

sponse to strikes, airline unions revive some old-style forms of industrial warfare of their own. Examples of the techniques utilized include Northwest baggage handlers misrouting bags, and American flight attendants carrying one tray at a time and reporting safety violations to the FAA.²⁷ According to one observer, “[b]ollixing the operation from within—the primal form of systematic pressure—is the trend.”²⁸ Similarly, an AFL-CIO official recently commented, “It’s more effective to stay inside and work to rule. Employers are much more frightened of this, because they don’t know what we’re going to do.”²⁹

The “work to rule” strategy is most frequently employed in the airline industry by pilots, although mechanics and other employee groups may engage in similar types of slowdown actions as well. “Work to rule” is particularly well-suited to pilots because of the enormous amount of discretion pilots have over safety issues and other operational matters. Pilots have the prerogative to insist that all aircraft systems be perfect before embarking upon a flight, even though normally a pilot may overlook minor defects or wait until the end of the day to have them repaired. As part of a work slowdown, a pilot may insist that non-airworthiness items such as loose toilet handles, leaking galley faucets, scratched windows, and loose tray tables be repaired prior to departure. Minor acts of sabotage may be engaged in as well, such as draining crew oxygen bottles or releasing emergency exit slides. Each such item takes considerable time to repair even under the best circumstances, but often these items are “discovered” at remote stations where the carrier has no line maintenance personnel of its own, requiring that

²⁷ Conway, *Standards Governing Permissible Self-Help*, in *CLEARED FOR TAKEOFF: AIRLINE LABOR RELATIONS SINCE DEREGULATION*, *supra* note 1, at 201, 214.

²⁸ *Id.* at 214.

²⁹ *Combination of Many Factors Seen Contributing to Decline In Strikes*, Daily Lab. Rep. (BNA) No. 62, at C-1 (Apr. 3, 1989).

maintenance personnel from another carrier be summoned.

Pilots may also slow down flight operations by following Federal Aviation Regulations and carrier operations manuals to the letter. For example, pilots may insist upon instrument approaches in clear weather or upon repeating verbatim all air traffic controller instructions. On March 7, 1989, ALPA threatened to engage in such a "work to rule" campaign on a nationwide basis in support of the strike at Eastern. As it turned out, however, fewer flight delays actually occurred nationwide on that day than normal.³⁰

Another tactic, utilized recently by United pilots and called "Sweet Sixteen," involves purposely arriving more than fifteen minutes late. This is accomplished by actions such as slow taxiing, ordering elaborate maintenance checks between flights, and flying with so much fuel that the aircraft is slowed by its weight.³¹ This adversely affects the carrier's published on-time performance rating, as the Department of Transportation takes into account only delays of more than fifteen minutes in compiling such statistics.³²

Pilot slowdown campaigns date back to the 1960s, with the advent of "Withdrawal of Enthusiasm" or "WOE" campaigns directed against carriers engaged in bargaining with ALPA. In August 1968, Max E. Davis, an Eastern Airlines pilot, authored a paper entitled "The 'Slow Down' As a Negotiating Tool."³³ This paper describes an ALPA campaign for a "Withdrawal of the Spirit of Cooperation" during pilot negotiations at Eastern Airlines and was designed to serve as a blueprint for future pilot

³⁰ *Intelligence*, 295 AVIATION DAILY 421, (Mar. 9, 1989). While there are normally an average of 1,148 flight delays per day, there were only 995 delays nationwide on March 7, 1989. *Id.*

³¹ Nomani, *United Air's Performance Has Taken Big Dive, Hurt By Pilots' Union Action*, Wall. St. J., Sept. 18, 1989, at A4.

³² *Id.*

³³ M. Davis, *The "Slow Down" As a Negotiating Tool* (Aug. 1968)(unpublished paper).

groups wishing to initiate a similar program.³⁴

The author of this blueprint classified the slowdown as an "economic weapon".³⁵ He described how a "theme" is developed for a slowdown campaign, based upon the goal of encouraging pilots "not to let problems of low morale [apparently the result of a lack of progress in collective bargaining negotiations] influence them adversely in the safe operation of their daily flights."³⁶ The paper then describes in detail the steps for an ALPA Master Executive Council to take in planning and executing a slowdown campaign.³⁷ This paper still circulates around the airline industry today, and the number of pilot slowdowns that have occurred in recent years indicates that its principles are still being applied.

The net, and intended, result of slowdowns by pilots and other employee groups is the delay or cancellation of flights. Slowdowns bring a potent form of pressure to bear upon a carrier because inconvenienced, irate passengers caught in the middle of such a war between an airline and its employees are likely to take their business elsewhere, given the choice. A carrier's options in such a situation are limited. A carrier may discipline the ringleaders if it can find them, but only if the conduct involved is not simply strict adherence to the Federal Aviation Regulations or company operating procedures. In addition, a carrier may seek injunctive relief and damages, but such a strategy can easily backfire if conclusive proof of a union conspiracy is not available. A union in such a situation is likely to defend itself in court and in the media by underscoring its "concern" for passenger safety, and no federal judge is likely to order pilots to violate Federal Aviation Regulations or to fly in an "unsafe" manner.

Employee sickouts are a less sophisticated version of

³⁴ See *id.* at 1.

³⁵ *Id.* at 8. "The slow down, call it what you will—'withdrawal of enthusiasm,' 'lay aside enthusiasm,' 'safety program,' 'withdrawal of the spirit of cooperation'— is essentially an economic weapon against the Company." *Id.*

³⁶ *Id.* at 2.

³⁷ *Id.* at 2-8.

guerilla warfare in the workplace than are slowdowns, but they still occur. Sickouts are particularly prevalent among flight attendants and ground personnel whose jobs do not permit them as much discretion over carrier operations as with pilots and mechanics. A sickout, if sufficiently widespread, can cause the same magnitude of disruption to service as can a slowdown, with flights being delayed or cancelled for lack of crews. While a sickout is easier to detect than a slowdown, proving union responsibility can be just as difficult.³⁸ Devices such as "telephone trees," communication networks by which the directive to call in sick is spread by word of mouth, are often utilized, so that no obvious "smoking guns" in the form of written directives may be found.

III. SLOWDOWNS AND SICKOUTS AS PREMATURE SELF-HELP UNDER THE RAILWAY LABOR ACT

The Railway Labor Act (RLA), which governs air carriers and their employees,³⁹ provides a mandatory procedure of negotiations, mediation and possible arbitration whenever a carrier or union wishes to effect a change in the terms of a collective bargaining agreement.⁴⁰ The party desiring the change must first give the other party at

³⁸ See, e.g., *Air Line Pilots Ass'n v. United Air Lines*, 802 F.2d 886, 905-06 (7th Cir. 1986) (requiring that a carrier prove union involvement by clear and convincing evidence), *cert. denied*, 480 U.S. 946 (1987).

³⁹ Railway Labor Act, Pub. L. No. 487, 49 Stat. 1189 (1936) (codified as amended at 45 U.S.C. §§ 151-188 (1982)). The RLA was made applicable to the airline industry in 1936. *Id.*

⁴⁰ See 45 U.S.C. § 156 (1982). Such disputes over the terms of an agreement are now known as "major disputes." See *Elgin, J. & Eastern Ry. v. Burley*, 325 U.S. 711, 723 (1945). The Supreme Court describes major disputes as

disputes over the formation of collective agreements or efforts to secure them. They arise where there is no such agreement or where it is sought to change the terms of one, and therefore the issue is not whether an existing agreement controls the controversy. They look to the acquisition of rights for the future, not to assertion of rights claimed to have vested in the past.

Id. at 723. "Minor disputes," on the other hand, relate either to the meaning or proper application of a provision in a collective bargaining agreement already in place. *Id.*

least thirty days advance written notice of such change.⁴¹ The parties must then confer with one another concerning the proposed change.⁴² If agreement cannot be reached, either party may invoke the mediatory services of the National Mediation Board (NMB).⁴³ If the NMB's services are invoked, that agency assigns a mediator to meet with the parties in an attempt to induce agreement.⁴⁴ If the NMB determines that it will be unable to bring about a settlement of the controversy through mediation, it will then proffer to the parties binding arbitration of the dispute.⁴⁵ If either or both of the parties declines the NMB's proffer of arbitration, the NMB notifies the parties that its mediatory efforts have failed and that they will be free to engage in self-help following the expiration of a thirty-day "cooling off" period.⁴⁶ Additionally, the RLA provides that if a dispute, in the judgment of the NMB, "threaten[s] substantially to interrupt interstate commerce to a degree such as to deprive any section of the country of essential transportation service," the NMB shall notify the President, who may create an "Emergency Board" to investigate and report respecting such dispute.⁴⁷

Throughout this entire process, including the thirty-day cooling off period,⁴⁸ "neither party may unilaterally alter

⁴¹ 45 U.S.C. § 156 (1982).

⁴² *Id.* § 152 Second.

⁴³ *Id.* § 155a (First)(a).

⁴⁴ *Id.*; see also 29 C.F.R. § 1203.1 (1988) (setting out the procedural requirements for application to the National Mediation Board).

⁴⁵ 45 U.S.C. § 155 (First) (1982).

⁴⁶ *Id.*

⁴⁷ 45 U.S.C. § 160 (1982). Emergency Boards are relatively rare in the airline industry. None has been appointed since the 1960s. While the NMB found conditions to justify appointment of an Emergency Board in the Eastern Airlines strike of 1989, the President disagreed and declined to appoint such a board. See *President Opts Not to Create Emergency Board*, 295 AVIATION DAILY 391 (Mar. 6, 1989).

⁴⁸ Where a Presidential Emergency Board has been appointed, the RLA provides for two thirty-day "cooling-off" periods. One cooling-off period follows the NMB's proffer, and the parties refusal, of binding arbitration, 45 U.S.C. § 155 First (1982), and the other follows the Presidential Emergency Board's submission of its report to the President. 45 U.S.C. § 160 (1982).

the status quo.”⁴⁹ The Supreme Court announced in *Detroit & Toledo Shore Line Railroad v. United Transportation Union*, that both parties are obligated during the cooling off period to preserve and maintain the working conditions in effect before the dispute arose.⁵⁰ The Supreme Court in *Shore Line* further noted that the immediate effect of the RLA’s status quo requirement is to prevent a strike, while the long term effect is to provide time for tempers to cool so that rational bargaining can occur.⁵¹ The RLA’s status quo obligation is enforceable via injunctive relief,⁵² and a damages remedy for union violations of the status quo may be available to carriers as well.⁵³

The status quo under the RLA extends to all those “actual, objective working conditions out of which the dispute arose, and clearly [such] conditions need *not* be covered in an existing [collective bargaining] agreement.”⁵⁴ In the Congressional hearings on the legislation that was to become the RLA, Donald Richberg, the chief drafter of the legislation, commented about the status quo obligations: “The thought was to include in the broadest

⁴⁹ *Brotherhood of R.R. Trainmen v. Jacksonville Terminal Co.*, 394 U.S. 369, 378 (1969) (citing the Railway Labor Act, *supra* note 39, §§ 2 Seventh, 5 First, 6, 10).

⁵⁰ 396 U.S. 142, 152-53 (1969). The court held: “The obligation of both parties during a period in which any of these status quo provisions is properly invoked is to preserve and maintain unchanged those actual, objective working conditions, broadly conceived, which were in effect prior to the time the pending dispute arose” *Id.*

⁵¹ *Id.* at 150. The court stated:

The Act’s status quo requirement is central to its design. Its immediate effect is to prevent the union from striking and management from doing anything that would justify a strike. In the long run, delaying the time when the parties can resort to self-help provides time for tempers to cool, helps create an atmosphere in which rational bargaining can occur, and permits the forces of public opinion to be mobilized in favor of a settlement without a strike or lockout.

Id.

⁵² *Chicago & N.W. Ry. v. United Transp. Union*, 402 U.S. 570, 581-84 (1971).

⁵³ See *Denver & Rio Grande R.R. v. Brotherhood of R.R. Trainmen*, 58 L.R.R.M. (BNA) 2568, 2570 (D. Colo. 1965) (awarding carrier damages against union for unlawful strike); see also Arouca, *Damages for Unlawful Strikes Under the Railway Labor Act*, 32 HASTINGS L.J. 799 (1981) (discussing ways in which a court can fashion a damages remedy for carriers injured by unlawful strikes).

⁵⁴ *Shore Line*, 396 U.S. at 153 (emphasis added).

way all the factors which contributed to what is commonly called the status quo.”⁵⁵ For example, if a practice occurs “for a sufficient period of time with the knowledge and acquiescence of the employees to become in reality a part of the actual working conditions,” that practice becomes part of the status quo,⁵⁶ even if those practices *differ* from those specified in a collective bargaining agreement.⁵⁷

The RLA’s status quo obligation prohibits work slowdowns on the part of employees during the pendency of collective bargaining negotiations. As RLA drafter Richberg testified before Congress, the “*kind of service which the men are giving*” is an integral part of the status quo.⁵⁸ Thus, union conduct which may not be classified literally as a strike nonetheless constitutes a violation of the status quo if it has the *consequences* of a strike.⁵⁹

For example, in *Texas International Airlines v. Air Line Pilots Association*, Texas International pilots engaged in a number of tactics designed to slow down that carrier’s operations while contract negotiations were ongoing.⁶⁰ These tactics included submitting an excessive number of equipment malfunction reports, reporting equipment malfunctions at non-maintenance stations or in other ways to delay operations, and calling in sick.⁶¹ ALPA denied responsibility, arguing that the slowdown resulted from “bad morale” on the part of pilots due to lack of progress in contract negotiations.⁶²

The court rejected ALPA’s denial of responsibility, citing, among other things, a letter from ALPA’s Master Ex-

⁵⁵ *Hearings on H.R. 7180 Before the House Comm. on Interstate and Foreign Commerce*, 69th Cong., 1st Sess. 44 (1926) [hereinafter *Hearings*].

⁵⁶ *Shore Line*, 396 U.S. at 154.

⁵⁷ *Air Cargo, Inc. v. Local Union 851*, 733 F.2d 241, 246 (2d Cir. 1984). “If the parties have agreed to practices different than those specified in the collective bargaining agreement . . . the actual practices may constitute the status quo.” *Id.*

⁵⁸ *Hearings*, *supra* note 55, at 56 (emphasis added).

⁵⁹ *Air Line Pilots Ass’n v. United Air Lines*, 802 F.2d 886, 906 (7th Cir. 1986), *cert. denied*, 480 U.S. 946 (1987).

⁶⁰ 518 F. Supp. 203 (S.D. Tex. 1981).

⁶¹ *Id.* at 207.

⁶² *Id.* at 209.

ecutive Council (MEC) chairman to all Texas International pilots.⁶³ The letter urged pilots to "be professional," to "adhere to company policies and contractual agreements," and "not [to] neglect even the most minor writeups."⁶⁴ That letter further urged pilots "not [to] start engines until all doors are closed, and paperwork is on board, and checked for accuracy," and to check every item on pre-flight and post-flight checklists.⁶⁵ The court noted that the MEC chairman's directive concerning maintenance writeups was in fact followed by an increase in the number of writeups.⁶⁶ Further, an instruction sent to pilots via the union's telephone committee recommended that a pilot not fly if he did not feel well. This generated a marked increase in the number of pilots reporting off sick.⁶⁷

The court found that the slowdown which resulted from these activities constituted concerted action on the part of the union members,⁶⁸ and a violation of the RLA.⁶⁹ Rejecting ALPA's professed concern for safety, the court concluded that the increase in writeups was not "done for safety reasons but to coerce the plaintiff to adopt the defendant's contract proposals."⁷⁰ The court reasoned that had the pilots truly been motivated by a concern for safety, the number of maintenance writeups would have steadily increased over time, as opposed to showing peaks

⁶³ *Id.* at 210.

⁶⁴ *Id.*

⁶⁵ *Id.*

⁶⁶ *Id.*

⁶⁷ *Id.* at 211.

⁶⁸ *Id.* at 213.

⁶⁹ *Id.* at 217. The court observed:

Although . . . mechanical items must be reported as they are identified by pilots, there necessarily exists a high degree of discretion with the individual pilot as to such determinations, for example, as whether a particular knob on the control panel is sticking or a particular lighted dial is dim to the point of needing a new light bulb. The number of writeups, their timing and the location at which they are submitted can have substantial impact on delays in flight operations.

Id. at 210.

⁷⁰ *Id.* at 213.

and valleys.⁷¹

The *Texas International* court found the remaining requirements for injunctive relief to be met as well.⁷² It found that the loss of customer goodwill suffered by the carrier as a result of the slowdown constituted irreparable harm.⁷³ Additionally, the court noted that injunctive relief served the public's interest in unimpeded and timely travel.⁷⁴

Other courts have enjoined work slowdowns as well, although without extensive analysis.⁷⁵ One court observed that concerted refusals of overtime, slowdowns, sit-ins, and similar forms of harassment carried out by employees during contract negotiations violate the duty imposed by the RLA to make every reasonable effort to settle disputes and to avoid interruption of service.⁷⁶

Similarly, sickouts have also been held enjoined.⁷⁷ In *Pan American World Airways v. Independent Union of Flight At-*

⁷¹ *Id.*

⁷² *Id.* at 214-15. The court applied the traditional four-part test for preliminary injunctive relief:

(1) a substantial likelihood of success on the merits; (2) serious or irreparable injury in the absence of preliminary [injunctive] relief; (3) greater harm [to the moving party] in the absence of preliminary [injunctive] relief than would be suffered by the opposing party if such relief is granted, and (4) [injunctive relief is in] . . . the public interest.

Id. at 215, (citing 7 J. MOORE, J. LUCAS & K. SINCLAIR, MOORE'S FEDERAL PRACTICE ¶ 65.04[1] (2d ed. 1989)).

⁷³ *Id.* at 214.

⁷⁴ *Id.* "The interest of the public is served by enjoining any and all actions that would have the effect of impeding their right to travel and expectation of timely travel." *Id.*

⁷⁵ See, e.g., *Pan Am. World Airways v. Transport Workers Union*, 117 L.R.R.M. (BNA) 3350 (E.D.N.Y. 1984) (slowdown and sickout enjoined); *Piedmont Aviation, Inc. v. Air Line Pilots Ass'n*, 71 L.R.R.M. (BNA) 3216 (M.D.N.C. 1969) (work slowdown enjoined); see also *Long Island R.R. v. System Fed'n No. 156*, 289 F. Supp. 119 (E.D.N.Y. 1968) (slowdown by railroad union enjoined).

⁷⁶ *United Air Lines v. International Ass'n of Machinists*, 54 L.R.R.M. (BNA) 2154, 2156 (N.D. Ill. 1963). The Railway Labor Act imposes the duty "to exert every reasonable effort to settle all disputes in order to avoid any interruption to commerce or to the operation of any carrier." *Id.*; 45 U.S.C. § 152 First (1982).

⁷⁷ See, e.g., *Air Line Pilots Ass'n v. United Air Lines*, 802 F.2d 886, 905 (7th Cir. 1986), cert. denied, 480 U.S. 946 (1987). "We have no doubt that a concerted union plan to abuse sick leave as an economic weapon in the pre-strike period could be found, in the appropriate circumstances, violative of the RLA." *Id.*

tendants,⁷⁸ flight attendants engaged in a sickout during collective bargaining negotiations. Specifically, the sickout was called to protest the carrier's equipment switch, which substituted aircraft requiring fewer flight attendants.⁷⁹ While there was no official union sponsorship of the job action, the union emphatically announced to its members that it had not agreed that there would *not* be a sickout, maintaining that its officers could not be responsible for the health of the flight attendants.⁸⁰ In addition, a letter circulated in Florida by "A Committee of Concerned Flight Attendants" expressly called for a sickout,⁸¹ and a bulletin from the union's New York based chairperson implicitly encouraged the action.⁸²

The court was not deterred by the absence of a "smoking gun" directly tying the sickout to union officials. In enjoining the job action, the court concluded that a serious question existed as to whether the union's actions, and its *inaction* in not making a reasonable effort to discourage the sickout, violated the union's duty under the RLA to settle disputes without interrupting carrier service.⁸³

The court also noted the empirical evidence that both the absolute number of flight attendants calling in sick and the percentage of the total work force calling in sick on the dates in question were significantly higher than the year before.⁸⁴ The court found that the delays and understaffing of flights resulting from the sickout irreparably injured the carrier's business reputation and goodwill

⁷⁸ 93 Lab. Cas. (CCH) ¶ 13,307 (S.D.N.Y. 1981).

⁷⁹ *Id.* at ¶¶ 20,039-20,040.

⁸⁰ *Id.* at ¶ 20,040. An unsigned notice on a union bulletin board read in part, "IUFA officers [can] not be held responsible for the medical health of 6300 Flight Attendants." *Id.*

⁸¹ *Id.*

⁸² *Id.* at ¶¶ 20,939-20,040. Chairperson DeBisschop's message concluded: "THE POWER TO EFFECT CHANGE FOR OUR GROUP COMES FROM WITHIN. THE DECISION AS TO WHAT OUR FUTURE HOLDS RESTS WITH EACH INDIVIDUAL MEMBER." *Id.*

⁸³ *Id.* at ¶¶ 20,041-20,042.

⁸⁴ *Id.* at ¶ 20,036.

among passengers.⁸⁵ The court further concluded that the union and its members would not be injured by an injunction, particularly since the union had steadfastly insisted that it had not called or encouraged the sickout in the first place.⁸⁶

Slowdowns and sickouts, therefore, clearly are enjoined under the RLA. One potential hurdle that unions attempt to throw into the path of employers seeking injunctive relief, however, is Section 106 of the Norris-LaGuardia Act.⁸⁷ This statute prohibits courts from holding unions responsible for (among other things) illegal self-help activity absent "clear proof" of the union's authorization or ratification of such activity or of participation in such activity by union officials.⁸⁸

Courts will find union responsibility where a union official, even at the local committeeman level, participated in the unlawful activity.⁸⁹ Even if a union official did not directly participate, courts will hold the union responsible if the union does not use reasonable means to get the employees back to work.⁹⁰ Moreover, a union's mere exhortations to its membership to go back to work are not necessarily sufficient to allow the union to escape liabil-

⁸⁵ *Id.* at ¶¶ 20,036-20,037; *accord* *Ozark Air Lines v. Air Line Pilots Ass'n*, 361 F. Supp. 198, 202 (E.D. Mo. 1973) (loss of customer goodwill resulting from employee job action constitutes irreparable harm).

⁸⁶ *Pan Am.*, 93 Lab. Cas. (CCH) at ¶ 20,042.

⁸⁷ Norris-LaGuardia Act, 29 U.S.C. §§ 101-110, 113-115 (1982 & Supp. II 1984).

⁸⁸ *Id.* § 106. Section 106 of the Norris-LaGuardia Act states:

No officer or member of any association or organization, and no association or organization participating or interested in a labor dispute, shall be held responsible or liable in any court of the United States for the unlawful acts of individual officers, members, or agents, except upon clear proof of actual participation in, or actual authorization of, such acts, or of ratification of such acts after actual knowledge thereof.

Id.

⁸⁹ *See, e.g.*, *Eazor Express, Inc. v. International Bhd. of Teamsters*, 520 F.2d 951, 963-64 (3d Cir. 1975); *Wagner Elec. Corp. v. Local 1104*, 496 F.2d 954, 956 (8th Cir. 1974); *Vulcan Materials Co. v. United Steelworkers of America*, 430 F.2d 446, 456 (5th Cir. 1970).

⁹⁰ *See, e.g.*, *Carbon Fuel Co. v. United Mine Workers of America*, 582 F.2d 1346, 1350 (4th Cir. 1978); *Wagner Elec. Corp.*, 496 F.2d at 956.

ity.⁹¹ As one court recognized, a union's directives to its members to return to work may be discounted if the directives lack authoritative forcefulness.⁹² Accordingly, a union may not avoid liability for unlawful job actions merely by denying responsibility and urging employees to return to work. Measures such as union disciplinary action against ringleaders and participants, or even temporary assumption of control over a local union by the international leadership may be required.⁹³

Another means by which courts may hold unions liable for unlawful job actions is the "mass action" theory of liability. Under this theory, if all or a substantial majority of the members of a bargaining unit engage in an unlawful job action, union responsibility will be imputed.⁹⁴ The mass action theory, which has been described as a "sensible and pragmatic approach" to the problem of union responsibility for wildcat strikes,⁹⁵ would be equally applicable to slowdowns and sickouts. Like wildcat strikes, slowdowns and sickouts do not just "happen" without some central point of instigation or coordination.

⁹¹ *E.g.*, *U.S. Steel Corp. v. United Steelworkers of America*, 598 F.2d 363, 365 (5th Cir. 1979) ("Ratification occurs where the union's efforts to return strikers are so minimal that the union's approval or encouragement may be inferred."); *Wagner Elec. Corp.*, 496 F.2d at 956 (union's exculpatory press release not sufficient to shield it from liability).

⁹² *U.S. Steel Corp.*, 598 F.2d at 366. "The record supports the district court's characterization of the local officials' return-to-work directives as so lacking in authoritative forcefulness that they were not heard at all . . . or were discounted as being merely stage lines parroted for the benefit of some later judicial review." *Id.*

⁹³ *See, Eazor Express*, 520 F.2d at 964.

⁹⁴ *See, e.g.*, *Carbon Fuel*, 582 F.2d at 1349; *Turnkey Constructors, Inc. v. Cement Masons Local Union No. 685*, 580 F.2d 798, 798-800 (5th Cir. 1978); *Wagner Elec. Corp.*, 496 F.2d at 956. The basis for this theory is that

[w]hen all members of a union employed by a given employer engage in a concerted strike not formally authorized by the union, as happened here, many courts hold the union responsible on the theory that mass action by union members must realistically be regarded as union action. The premise is that large groups of men do not act collectively without leadership and that a functioning union must be held responsible for the mass action of its members.

Id.

⁹⁵ *Carbon Fuel*, 582 F.2d at 1349-50.

IV. THE USE OF STATISTICAL ANALYSIS TO PROVE CONSPIRATORIAL ACTION IN SLOWDOWNS AND SICKOUTS

While prior cases usually have involved some overt indicia of union instigation or responsibility, unions have become increasingly adept at instigating slowdowns and sickouts without leaving incriminating "smoking gun" evidence behind. A carrier can become profoundly frustrated by the fact that, while the existence of a slowdown or sickout during contract negotiations may be common knowledge, the difficulty of proving conspiratorial action on the part of the union and its leaders is often an insuperable bar to obtaining injunctive relief.

To overcome this difficulty, techniques of statistical analysis long employed by the courts in civil rights and employment discrimination cases⁹⁶ may be adapted for application to employee slowdowns and sickouts in the airline industry. Just as statistical analysis can indicate whether a particularly low number of minorities in a workforce is of such statistical significance as to justify an inference of discrimination in hiring or promotions, the same statistical tools may be used to prove that a rise in the number of flight delays or cancellations due to slowdown activity, or an increase in the number of employees calling in sick, is of such statistical significance as not to be attributable to random causes.

A. *The Binomial Method*

While there are a number of available tests for statistical significance,⁹⁷ one of the most popular and effective is

⁹⁶ For a discussion of the sophisticated statistical tools economists have developed to determine the existence and extent of unlawful employment discrimination, see generally Gwartney, Asher, Haworth & Haworth, *Statistics, the Law and Title VII: An Economist's View*, 54 NOTRE DAME LAW. 633 (1979).

⁹⁷ See, e.g., H. KOHLER, *STATISTICS FOR BUSINESS AND ECONOMICS* 190-234 (1988) (discussing binomial, hypergeometric and Poisson probability distributions); Keim & Quigg, *The Sickout: Using and Evaluating Statistical Evidence in a Prima Facie Case*, 13 EMPLOYEE REL. L.J. 445, 453-57 (1987) (applying Poisson formula to employee sickouts).

the binomial method. The binomial method is applied to random stochastic events which can lead to only one of two outcomes (hence the term "bi-nomial"). Examples are selection of black vs. white employees, or males vs. females.⁹⁸ More abstract notions, such as success vs. failure, may be analyzed by the binomial method as well.

A sequence of coin tosses provides a good illustration of the binomial method. Each toss presents one of two possible results: heads or tails. No matter how many tosses are made, the probability of a random throw yielding heads is exactly 0.5. Similarly, the probability of a random throw yielding tails remains a constant 0.5 as well. Taking another example, a selection of black employees from a pool where 10% of the applicants are black would, on the average, yield a selection probability of 0.1 black and 0.9 white.⁹⁹ That is, we would expect one black to be chosen for every nine whites.

When the probability of a binomial random event is known (based, for example, upon past experience), its expected value, $E(v)$, may be calculated as follows:

$$E(v) = N \times P(v),$$

where

N = the number of trials or the sample size of observations, and

P = the probability of the variable (v) to occur randomly.

Thus, employing the simple coin-toss example, tossing a coin 100 times ($N = 100$) would be expected to yield fifty heads (100×0.5), and fifty tails ($100 \times (1 - 0.5)$).

Since the event in question is assumed to be stochastic, the outcome remains uncertain. In other words, the actual value observed may well differ from the expected value. For example, in actuality, 100 coin tosses might produce forty-five heads instead of fifty. Whether this dif-

⁹⁸ D. BARNES, STATISTICS AS PROOF 81 (1983).

⁹⁹ *Id.*

ference is statistically significant must be determined through further analysis.

The chief means of determining the statistical significance of the difference between the expected value and the actual value is by calculating the number of "standard deviations" represented by the difference. The standard deviation for a distribution is the number that describes the degree to which disparities spread out above and below the mean, or average, of the distribution.¹⁰⁰ If it is assumed that a sample distribution is a normal distribution, it can be represented as a bell-shaped curve bisected by the mean of the distribution. (See Illustration #1). In any random distribution, the area under any segment of the bell curve represents the inverse of the probability of

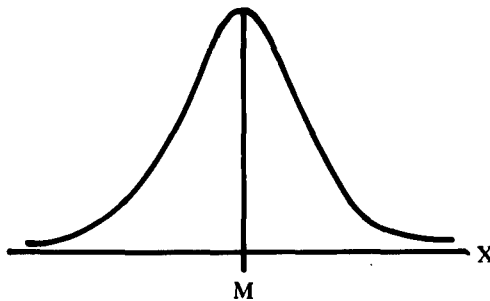


Illustration #1

that range of results occurring randomly. The statistical significance of a given disparity of outcomes is reflected on a relative scale ranging from 0 to 1.0.¹⁰¹ Since the level of statistical significance rises as the probability level declines from 1.0 to 0, a probability level of 0.01 is more statistically significant than a probability level of 0.05.¹⁰²

The percentage of the area underneath a bell curve within one standard deviation from the mean of a normal distribution is the same for all normal distributions,

¹⁰⁰ D. BALDUS & J. COLE, STATISTICAL PROOF OF DISCRIMINATION 295 (1980).

¹⁰¹ *Id.* at 308.

¹⁰² *Id.*

68.26%.¹⁰³ This percentage represents the probability that a particular result will occur within one standard deviation of the mean.¹⁰⁴ The probability of a result occurring within two standard deviations of the mean is 95.44%, and the probability of a result occurring within three standard deviations is 99.73%.¹⁰⁵ (See Illustration #2).

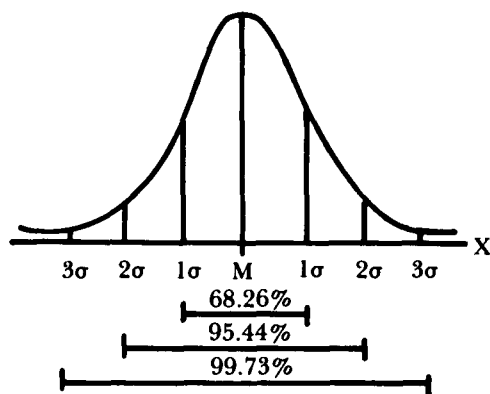


Illustration #2

The standard deviation (σ) for a particular distribution is calculated as follows:

$$\sigma = \sqrt{N \times P(v) \times (1 - P(v))}$$

where N = number of trials of sample size of observations, and

$P(v)$ = probability of the variable (v) to occur randomly.

The number of standard deviations for a particular distribution (z), in turn, is calculated as follows:

$$z = \frac{A(v) - E(V)}{\sigma}$$

where $A(v)$ = actual value (or observed value), and

$E(v)$ = expected value.

Once the number of standard deviations is calculated, the

¹⁰³ *Palmer v. Shultz*, 815 F.2d 84, 93 (D.C. Cir. 1987) (citing W. CURTIS, STATISTICAL CONCEPTS FOR ATTORNEYS 72-73 (1983)).

¹⁰⁴ See *id.* at 93-94 (providing a basic explanation of the concept of standard deviations).

¹⁰⁵ *Id.* at 93.

probability of a particular result occurring at random may be determined by consulting standard statistical tables.¹⁰⁶ In general, however, the probability of an event occurring at random is the inverse of the percentage of the area under the bell curve represented by the number of standard deviations for a particular test statistic. For example, if the difference between the expected value and the actual value contains two standard deviations, there is only a 4.56% percent chance that the difference is attributable to random factors. The probability of random occurrence decreases exponentially as the value of z increases. For example, where $z = 3.7$, the probability of the event in question occurring by chance is approximately one in 10,000.

The role of statistical analysis then is to interpret the significance of actual observations that vary from the expected value. Are they random outlying events or the result of a biased, non-random process? Statistics cannot establish as a matter of absolute certainty whether or not a particular outcome occurred at random. Statistics only deal with probabilities, and whether a certain level of probability is *statistically significant* is a value judgment.¹⁰⁷ To provide a general answer to this question however, statisticians have devised the convention of the two to three standard deviations rule.¹⁰⁸ Under this convention, if the actual value (observed outcome) falls outside two or three standard deviations, then the presumption that such an outcome occurred at random is typically rejected.¹⁰⁹

B. *Judicial Application of the Binomial Method*

Courts routinely have utilized the binomial method in civil rights and employment discrimination cases. The Supreme Court first relied upon this analysis in *Castaneda v. Partida*,¹¹⁰ a case involving racial discrimination in jury selection. In *Castaneda*, the Court noted a disparity between the percentage of Mexican-American persons in the county at issue (79.1%) and the percentage of Mexican-

¹⁰⁶ One such table may be found in H. KOHLER, *supra* note 97, app. Table H, at T-25.

¹⁰⁷ D. BALDUS & J. COLE, *supra* note 100, at 308.

¹⁰⁸ *Id.* at 294-95.

¹⁰⁹ *Id.* at 294 n.12.

¹¹⁰ 430 U.S. 482 (1977).

Americans summoned for grand jury service (39%).¹¹¹ The court then applied the binomial method to determine whether this disparity was statistically significant.¹¹²

Given that 79.1% of the population in the county was Mexican-American and 870 persons were selected to serve on grand juries over the eleven-year period examined, the Castaneda Court reasoned that the *expected* number of Mexican-Americans serving on grand juries would be approximately 688.¹¹³ The *actual* number, however, was only 339.¹¹⁴ The Court recognized that in any given drawing, the actual number of Mexican-Americans selected may fluctuate from the number predicted statistically, but emphasized that the important point is whether "the results of a random drawing are likely to fall in the vicinity of the expected value."¹¹⁵ The Court adopted the two or three standard deviations test, and noted that the number of standard deviations between the expected number of Mexican-American grand jurors and the actual number selected was approximately twenty-nine.¹¹⁶ The Court further observed that, in light of the magnitude of this difference, there was less than a one in ten to the 140th power probability that such a substantial departure from the expected number occurred by chance.¹¹⁷ Accordingly, the Court found a *prima facie* case of discrimination in jury selection to have been established, thus shifting the burden of proof to the defendant state to overcome the presumption of intentional discrimination.¹¹⁸

The Supreme Court revisited the binomial method later the same year in *Hazelwood School District v. United States*.¹¹⁹

¹¹¹ *Id.* at 495.

¹¹² *Id.* at 496 n.17.

¹¹³ *Id.*

¹¹⁴ *Id.*

¹¹⁵ *Id.*

¹¹⁶ *Id.*

¹¹⁷ *Id.*

¹¹⁸ *Id.* at 497-98.

¹¹⁹ 433 U.S. 299 (1977).

Hazelwood involved allegations of a pattern or practice of employment discrimination in teacher hiring, in violation of Title VII of the Civil Rights Act of 1964.¹²⁰ The Court noted that, while blacks comprised at least 5.7% of the qualified teachers in the relevant geographical area, only 1.4% and 1.8% of the teachers in the Hazelwood School District were black in the 1972-73 and 1973-74 school years.¹²¹ The Court utilized the binomial method to determine whether this disparity was statistically significant. Using the 5.7% figure as the probability multiplier, and multiplying it by the total number of teachers in the Hazelwood District, the Court obtained "expected values" of sixty-three black teachers in 1972-73 and seventy in 1973-74.¹²² It then noted that the actual number of black teachers employed each year was sixteen and twenty-two, respectively.¹²³ The binomial method indicated that the difference between the actual value and the expected value amounted to more than six standard deviations in 1972-73 and more than five in 1973-74.¹²⁴ Because of this finding, the burden of proof shifted to the employer to dispel the presumption of discriminatory hiring supported by the binomial statistical method.¹²⁵

In *Palmer v. Shultz*,¹²⁶ the court synthesized the statistical principles established by the Supreme Court in *Castaneda* and *Hazelwood*, and applied the binomial method to a case

¹²⁰ 42 U.S.C. §§ 2000e to 2000e-17 (1982 & Supp. IV 1986).

It shall be an unlawful employment practice for an employer to fail or refuse to hire or to discharge any individual, or to otherwise discriminate against any individual with respect to his compensation, terms, condition, or privileges of employment, because of such individual's race, color, religion, sex or national origin.

Id. § 2000e-2(a).

¹²¹ *Hazelwood*, 433 U.S. at 308.

¹²² *Id.* at 308 n.14.

¹²³ *Id.*

¹²⁴ *Id.* Re-affirming the "two or three" standard deviations rule, the Court maintained that, as a general rule when dealing with large samples, if the difference between the expected value and the actual value is greater than two or three standard deviations, the validity of the hypothesis must be questioned. *Id.*

¹²⁵ *Id.* at 310.

¹²⁶ 815 F.2d 84 (D.C. Cir. 1987).

involving alleged sex discrimination in job assignments and promotions at the State Department.¹²⁷ The *Palmer* case is a useful reference, moreover, because the court provides a detailed exposition of the binomial method and its role in proving unlawful employment discrimination.

The *Palmer* court begins its analysis by noting that a disparity between the selection rates of men and women for a particular job or job benefit has one of three possible causes: (1) unlawful discriminatory animus, (2) a legitimate nondiscriminatory cause (*e.g.*, only men might have the prerequisite training or experience), or (3) pure chance.¹²⁸ The court explained that statistical analysis can determine the probability that a particular disparity is the result of chance.¹²⁹ If the probability of a disparity resulting from chance is sufficiently small, courts will infer *from the numbers alone* that, more likely than not, the disparity resulted from unlawful discrimination.¹³⁰ At that point, it is up to the defendant to prove a non-discriminatory basis for the disparity.¹³¹ This may be done either by establishing some legitimate cause for the disparity or by attacking the statistical calculations. For example, the defendant might discredit the calculations by showing that they are based upon faulty data or flawed computations.¹³²

The *Palmer* court noted the imprecision inherent in the "two or three" standard deviation test applied by the Supreme Court in *Castaneda* and *Hazelwood*, and adopted a .05 level of statistical significance.¹³³ This level represents

¹²⁷ See *id.* at 89-90.

¹²⁸ *Id.* at 90-91 (citing D. BALDUS & J. COLE, *supra* note 100, at 291).

¹²⁹ *Id.* at 91. "A statistical analysis of a disparity in selection rates can reveal the probability that the disparity is merely a random deviation from perfectly equal selection rates. Statistics, however, cannot entirely rule out the possibility that chance caused the disparity." *Id.*

¹³⁰ *Id.*

¹³¹ *Id.*

¹³² *Id.* at 99. However, more than "mere conjecture or assertion" is required for the defendant to show that some "missing factor," if taken into account by the plaintiff, would explain the disparity. *Id.* at 101 (citing *Bazemore v. Friday*, 478 U.S. 385 (1986)).

¹³³ *Id.* at 92.

1.65 standard deviations in a "one-tailed" test or 1.96 standard deviations in a "two-tailed" test.¹³⁴ At the .05 level, the odds are one in twenty that the result could have occurred by chance.¹³⁵ Thus, in the *Palmer* court's view, a probability of randomness of 5% or less is sufficient to create a presumption of unlawful discrimination.¹³⁶

The binomial method has been applied by lower courts in a number of other employment discrimination cases as well.¹³⁷ The frequency of its application is a compelling indication of the confidence which the courts have placed in it.

C. *Applications of the Binomial Method to Airline Employee Slowdowns and Sickouts*

The binomial method may be applied to work slowdowns and employee sickouts in the airline industry because most aspects of a slowdown or sickout are binomial in nature: on-time operation vs. delayed operation, equipment malfunction report vs. no report, flight cancellation vs. no cancellation, reporting sick vs. reporting to work. Application of the binomial method to these factors will indicate whether an increase in flight delays, flight cancellations, maintenance write-ups, or employees calling in

¹³⁴ *Id.* at 94. A "one-tailed" test requires an observed disparity to occur at only one end of the bell curve representing a normal distribution, while a "two-tailed" test requires the disparity to occur at either end of the bell curve. *Id.* "Five percent of the total bell curve can be found *either* in the range from 1.65 standard deviations from the mean to one extreme end of the bell curve *or* in the area from 1.96 standard deviations to both extreme ends of the bell curve." *Id.* "Two-tailed tests are used where the hypothesis to be rejected is that certain proportions are equal [e.g., the number of observed occurrences in two different observation periods] and not that one proportion is equal to or greater than the other proportion." *Id.* at 95. Thus, the two-tailed test will be most appropriate for analyzing employee slowdowns and sickouts.

¹³⁵ *Id.* at 92.

¹³⁶ *Id.*

¹³⁷ See, e.g., *McAlester v. United Air Lines*, 851 F.2d 1249 (10th Cir. 1988) (allowing statistical evidence to be used in employment discrimination cases); *EEOC v. Sears, Roebuck & Co.*, 839 F.2d 302 (7th Cir. 1988) (introduction of statistical evidence requires the opposing party to produce its own evidence so as to raise a material issue of fact); *Coates v. Johnson & Johnson*, 756 F.2d 524 (7th Cir. 1985) (discussing the use of statistical data relating to employment discrimination).

sick is attributable to chance (and thus innocent, at least from the standpoint of concerted action) or to a conspiracy on the part of the union and its members.

A comparison of the raw numbers associated with observed occurrences from one year to the next would generally be meaningless as evidence of a conspiracy. Increases in observed occurrences under a simple comparison of raw numbers might be attributable to variables such as schedule expansions, additions of new or older aircraft, or increases in the number of flight crews or other employees. Therefore, raw numbers are of little use in proving an unlawful conspiracy.

The binomial method, by contrast, factors out these variables by establishing appropriate *benchmarks of neutrality* for comparison with the results observed during the suspected job action at issue. An appropriate benchmark for measuring pilot slowdown activity, for example, would be the number of point-to-point flight segments flown. This would permit an accurate comparison to be made over two different time periods, regardless of whether the number of aircraft, flights, or flight crews had increased or decreased in the interim period. If, however, a new aircraft type is introduced into service during the interim period and that aircraft is proven to be particularly susceptible to mechanical problems, flight segments for that aircraft type may be eliminated from the comparison to prevent a possible skewing of the distribution.

To construct a binomial model for analyzing a pilot slowdown characterized by marked increases in delays, cancellations, and equipment malfunction reports, it will first be necessary to establish a period of time for comparison. This period may be any length of time during which slowdown activity has been occurring: a week, two weeks, a month. Next, the number of flight segments flown, both during the slowdown period and during the comparison period,¹³⁸ must be determined. Finally, the number of

¹³⁸ The comparison period ordinarily will be the same period during the previous year, although any prior period of identical duration may be used.

observed incidents—delays, cancellations, equipment malfunction reports—for both the current period and the comparison period, must be measured.

Once all of this information is gathered, the analysis may proceed. The first step is to determine the average probability of the occurrence of a particular event, based upon past experience. Thus,

$$P(i) = A(i)/F = \text{Probability of (i) for total flight segments during the comparison period}$$

where

- F = number of flight segments flown in the comparison period
- A(i) = actual number of observations, where (i) is defined MR, MRD, MRC, D or C, as follows:
- MR = number of maintenance reports submitted by pilots,
- MRD = number of maintenance reports resulting in flight delays,
- MRC = number of maintenance reports resulting in flight cancellations,
- D = number of flight delays, and
- C = number of flight cancellations.

This equation therefore defines the neutral benchmarks in each of the categories needed for hypothesis testing.

P(i) is then multiplied by the total flight segments flown in the current period to determine the expected value of (i), or E(i):

$$E(i) = P(i) \times F'$$

where

- F' = number of flight segments flown in current period.

E(i) is then compared with A'(i), the actual number of occurrences of (i) in the current period. In order to determine whether the difference between the expected and actual values of (i) is statistically significant, it is necessary to determine the number of standard deviations (z) represented by the difference between E(i) and A'(i). This is calculated as follows:

$$z = \frac{A'(i) - (P(i) \times F')}{\sigma(i)}$$

where

$$\sigma(i) = \sqrt{P(i) \times F' \times (1 - P(i))}$$

If the number of standard deviations is more than two or three, it can be inferred that the increase in the number of observed events is not due to random factors, but instead is likely attributable to conspiratorial action on the part of the pilots, by analogy to the principles established in *Castaneda* and *Hazelwood*. This analysis can be applied to all pilots during the suspect period, or to specific individual pilots, in order to determine who is innocent and who is guilty of conspiratorial action. Application of the analysis to individual pilots would be particularly useful in determining the extent of union officials' involvement in the job action.¹³⁹

The binomial method may be applied to slowdowns by employee groups other than pilots, or to sickouts by any employee group. Examples of neutral benchmarks for other groups are the number of trips flown for flight attendants or shifts worked for ground employees. For a suspected sickout, the occurrence measured ($A(i)$ and $A'(i)$) would be absenteeism, instead of cancelled or delayed flights, but the mode of analysis set forth above for pilot slowdowns would be the same.

If application of the binomial method to a slowdown or sickout indicates a difference of more than two or three standard deviations, the burden should be shifted to the union to prove that the disparity is due to some factor other than concerted action among the union's constituents. As in employment discrimination cases, the defendant union could show that the carrier's statistical analysis was faulty. However, by the same analogy, the union could *not* defend merely by arguing that there was "no ev-

¹³⁹ See *supra* note 89 and accompanying text.

idence" of concerted activity or union instigation of the job action.

Of course, in many cases in which a concerted slowdown or sickout is actually occurring, the number of standard deviations between the actual and expected measures under the binomial method may well exceed the two or three standard deviation threshold that is normally applied. While a union defendant in an action for injunctive relief may protest that the Norris LaGuardia Act requires that "clear and convincing" evidence of union responsibility be shown,¹⁴⁰ it would be difficult for a court to find such a standard is not met where it is shown that the likelihood of an increase in flight delays, cancellations, equipment malfunction reports, or employee absenteeism being attributable to chance is less than a one in a million.

V. CONCLUSION

A carrier need not sit idly by in frustration while its employees engage in work slowdowns or sickouts during collective bargaining negotiations. Such activity is illegal and enjoined. As unions have become more sophisticated in conducting such actions, union responsibility has become more difficult to prove. Statistical analysis provides carriers with a tool to use in meeting this challenge of proof. The binomial method in particular has served courts well in civil rights and employment discrimination cases. This method can serve equally well to aid carriers in challenging unlawful self help on the part of unions that otherwise might cause disruptions of commerce, passenger inconvenience, and irreparable economic injury to carriers.

¹⁴⁰ See *Air Line Pilots Ass'n v. United Air Lines*, 802 F.2d 886, 905-06 (7th Cir. 1986), *cert. denied*, 480 U.S. 946 (1987).

